Age, stages and the role of generation time in matrix models

J.D. Lebreton[1] .

The earliest matrix models, proposed in the 1940s, consider age classes, and were later proved to be equivalent to the discrete time version of the stable population theory. In this theory and models, besides the asymptotic growth rate, a very important characteristic is the turnover of individuals, measured in various ways by generation time. Models considering stages, on the contrary, do not take into account the age of individuals and seem largely preferable to age-structured models for many populations in which demographic characteristics are related to biological stages (such a seed, rosette, flowering plant, etc.) rather than to age per itself. These two kinds of models can be embedded as particular cases of stage by age models, or multistate models. Theses general models can be used to develop a multistate stable population theory with many advantages. This general theory is reviewed with emphasis on general rules for sensitivity analyses in which generation time plays a central role.

[1]CEFE, CNRS, 1919 Route de Mende, 34 293 Montpellier cedex 5 (e-mail: lebreton@cefe.cnrs-mop.fr).